Are We 'Paycheck Loyalists'?
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COMPUTERWORLD

The Newsweekly for the Computer Community

Weekly Newspaper – Second-class postage paid at Boston, Mass.

Vol. 2, No. 5 Cambridge, Massachusetts, January 31, 1968 Price: $9/year

Virginia To Save EDP $s
Page 3

Software Package Evaluates DOS Or OS Communications

PORT CHESTER, N.Y. – A $2,000 service, plus "machine time," has been started to provide a simulation of actual operating conditions in a 360 communications system. The service, run by Worldwide Computer Associates Inc. of Port Chester, New York, aims to identify bottlenecks that will occur during actual operation, and over- or under-utilization of equipment. It is called the WSC360 Evaluator and handles systems run under the Disk Operating System or full Operating System communications packages with BTAM or QTAM.

Jerald Greenberg, vice president of WCA, told COMPUTERWORLD that the prime user advantage would be greater assurance that a system would run as promised – by not having to rely on the free system design supplied by an IBM salesman.

"The IBM salesman orients his system toward the apparent maximum loading time," Mr. Greenberg said. "He looks at the demand palced on the system at the peak time of day, and works accordingly. By contrast, we will set up a mathematical model of the suggested system (including the number of lines, the various loadings throughout the day, the software to be used, etc.) and we will simulate the system again and again until we find the optimum configurations."

The new package has not yet been fully tested under live conditions. It has been used for one specific case, and another is presently in operation. The company, formed in April 1966, has been working with various clients for a year and a half using similar systems.

As well as being used for system

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$100 Keypunch Silencer

This Norwegian import – a keypunch-silencer – is being introduced into the USA at under $100 by Periphery, Inc. of Framingham, Mass.

NY Service Bureau Secret Bared

NEW YORK – John Felix Associates, a data processing company here, was revealed this week to have been a subsidiary of the Interpublic group of companies for the past five years. This came as a surprise because the company had been denying that it was owned by McCann-Erickson, the prime member of Interpublic. The public was led to assume that no financial link between the two companies existed.

Special Stock Created

John Felix, president of the data processing company, told COMPUTERWORLD that he felt these denials were necessary from a business point of view as Felix Associates also handled work for several other ad agencies. He also said that the denials were quite accurate as he was not owned by McCann-Erickson, but directly by Interpublic.

Interpublic created a special type of stock to handle the purchase of Felix Associates. Felix is now the only Interpublic shareholder holding Class C stock.

Hardware-Software Problems

During his discussion with COMPUTERWORLD, Mr. Felix also mentioned the difficulties that were recently referred to by Interpublic's new president, Robert Healy. Healy explained that some of the problems involved with late payments were due "to the failures of computers"' Mr. Felix confirmed that his IBM 360/40 had not performed the way he had expected it to. "It was down for hours, sometimes days," he told COMPUTERWORLD. In some cases Felix had to go outside and buy time just to carry basic work through. The difficulties, in his opinion, were with both the hardware and the software.

Share Committee Acts

IBM Rejects DOS Users' Ideas – Then Has Its Rejection Rejected!

WHITE PLAINS, N.Y. – IBM has received a rejection of their own rejection of a number of user requests. This came after 12 out of 13 requests, submitted by the Share DOS project to IBM, were not accepted and the last was only being "considered." The group's disappointment at the lack of progress resulting from direct negotiations (instituted at IBM's request) was aggravated by the fact that programming efforts of many other customers were also being ignored by IBM. For instance, one request called for some additional core image libraries. This has, in fact, been implemented in a number of installations – through user software – since May, 1967. IBM's response to the request was that they were "evaluating" it, but they had not contacted any of their customers who were successfully running this software!

Project manager Ronald P. Duncan, in his rejection letter addressed to IBM, emphasized that he expected the company to re-evaluate their resolutions. Further, that the project was submitting the resolutions to the Share Executive Board for formal processing to emphasize the point.

Requests Made

The actual resolutions asked for additional support for the 1442 card-punch; the use of the 2540 punch-feed-read as system input; for documentation on handling various unsupported units; for improvements in the linkage editor; and others. When submitted, they were supported by detailed discussion of the requirements, the problems that were occurring, and, in some cases, general background.

When discussing the question of the 1442 support, for instance, it was brought out that some specific IBM software was punching all 80 columns on the card – even when there were many blank columns at the end. This unnecessary punching greatly reduces the speed, and valuable computer time is being wasted through this piece of software at the user installations. The IBM response simply comments, "The current 1442 support has been found adequate for most users. Because of the limited usage of the 1442 with DOS, extension of this support cannot be justified."

Additional Work

The group intends to continue working with IBM in every possible way, and has already submitted four additional requests. One item is job accounting, something that is seriously needed for most DOS installations.

Details of the request, and IBM's responses begin on page 2.

New Defense Sec Is Seen Slowly Ending DOD Computer Image

WASHINGTON, D.C. – The appointment of Clark McAdams Clifford, designated successor to McNamara in the Pentagon, is expected to have major implications insofar as the "computer image" of the department is concerned. The new Secretary of Defense is known for being very effective in personal relations, and has worked well with many presidents – including Johnson, Kennedy and Truman. However, his skill is in personal relations, and computers, like congressmen, are likely to be treated politely.

No sharp end to the computer "whiz-kids" is expected, but it is generally thought that Clifford will expect them to be looking around for new jobs.

Staffing Problems

In the meantime, the power and effectiveness of his own personal relationships with key congressmen will replace the hard-line of computerized statistics. Whether or not he will be able to retain the necessary computer information systems and evaluation techniques that have been developed under McNamara, remains to be seen.

The problems of high-level staffing are serious, but probably not as acute as a few years ago. When McNamara started his operations there were few top level individuals who were both competent and politically reliable. In the meantime, however, there has been a constant growth of expertise in the Defense Department, in its contractors, and in many of the

continued on page 8

The 360 Mod 91 IS Alive And Well - In Maryland

The Model 91 is now in full operation at NASA's Goddard Space Flight Center after completing system tests. The performance exceeded NASA specifications, according to F.G. Rodgers, president of IBM's Data Processing Division.

Editorials

$5,800 – And Worth It

One of the most exciting activities presently available for experienced data processing people is given in our pages this week. It can cost you up to $5,800 – but every dollar will be well spent. We are referring, of course, to the systems engineering training course offered by IBM for its customers. These courses, being offered in Chicago, New York and Los Angeles, are extremely useful for training up key management or future management personnel to what is probably the highest technical standard presently available in the industry. They are also particularly valuable for training key people in the additional systems skills needed to make first class engineers, systems engineers, systems analysts, projects people or systems managers.

This is the first time these courses have ever been open to the public. We wholeheartedly recommend that you consider taking them.

A Brave Man

Elsewhere on this page we are raising the question of whether or not computing is a profession. We are making the point that the professional's loyalty is not bought with a pay check – and saying further, that often a computer man's loyalty is. Let us, therefore, partially redress the balance by paying tribute to a brave man who has come out and accepted the blame for what may involve an element of unprofessionalism.

Charles S. Rockwell, vice president and general manager of Sperry Gyroscope Division – heading a project described by Henry Barnes, New York City Traffic Commissioner as being a fiasco – has acknowledged that when the project ran into trouble, Sperry's response was to reduce the cost rather than go on to do the job they had contracted to do. A very brave statement for any man in authority to make. We welcome people with such bravery in our community.

Welcome Aboard, Sir

Secretary McNamara has shown the world how computers can be used. For this the computer community owes him a debt of gratitude. He has also shown all of us how the naked use of computer logic can lose friends.

Perhaps the new Secretary of Defense will show us how to use computers AND keep friends.

As the master of many computers, of course, Mr. Clifford is naturally a member of the computer community . . . so

Welcome aboard, sir.

COMPUTERWORLD
The Newsweekly for the Computer Community
TM Reg. U.S. Pat. Off.

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Pay-Check Loyalists?

We Like To Think That We Are Real Professionals – But Are We, Really?

The question of "professionalism" has many facets. In general, discussions within the computer community have stressed the need for "professional" status; the ways of knowing whether particular people are "professionals." Here, another aspect of professionalism is considered – the question of whether we are, or can, qualify as a profession. The argument is raised that we profess nothing – and, in fact, lack the basic qualifications.

Computer people are always talking about the professional aspect of our community. ACM, DPMA, SPA are our professional societies. Recruitment ads call for professional people, and when the question of what size carpet is allowed in our office we think immediately of our "professional" status. But, we all have doubts as to who the professionals really are.

Doubts probably occur to us when we are talking to people who are professionals – the old professions of church, medicine and law; the comparatively new professions of accounting and engineering. Their practitioners often have an aura about them which, regretfully, is missing in many of us. And yet their responsibilities are *not* an order of magnitude greater than ours. Under the absentee management of the programmer who originally wrote the programs, vast corporations are now operating space ships, day-to-day operations of governments, and the thousand-and-one computer functions that have become commonplace in our society. Clearly, when the responsibilities are carefully considered, an extremely good case can be made for us being a profession – and professionals.

But are we? Is there anything that distinguishes us from other professionals?

If you look at the other accepted professions you will find that they have a common characteristic. Each practitioner owes a greater loyalty to his profession than he does to his pay check! No employer, be they the United States Government, the United Mine Workers Union or one of the fabulously rich "Jet Set" *orders* a doctor around against his judgment. No litigant, be they James Hoffa, or the world's largest insurance company, *orders* the court to rule in their favor. A parishioner does not *order* his priest or minister to act against his conscience.

And, if a priest, doctor or judge were to accept such improper orders he would be chastised by his colleagues for unprofessional conduct – possibly losing his license to practice. There can be no excuse that the order came with the pay check; that great prosperity was the reward, deprivation the alternative. In short, there is no excuse for unprofessional conduct – in the great professions.

In the computer community we have no equivalent to either the loyalty required by our position, or the means to sanction a breach of loyalty.

Are we really a profession without them?

Share DOS Project

DOS Users' Requests To IBM

During the past four months the Share DOS/TOS Project has been working with IBM to define changes needed by users. The project defined the changes which they wanted, and presented them to the corporation. When the company responded it was found that 12 of the 13 requests had been turned down – and the other was not accepted – but simply "under consideration."

COMPUTERWORLD believes that many people will be interested in seeing just what changes were requested, and why IBM turned them down. Here are some of the requests – some more will be published next week.

DOS Committee Request–User Implemented Supervisor Calls:

The capability of implementing user supervisor calls at system generation time.

The DOS user inherently is not concerned with all that OS/360 has to offer, yet finds it necessary to implement some features which are not supported by DOS. Additional SVC's enabling the user to implement such extra features provide the means of bypassing the process of building in patches and logical transients, etc.

IBM Response:

The capability of implementing user supervisor calls at system generation time may not be a desirable solution. The DOS/360 supervisor is not modular and attaching routines to it can be quite difficult. A better solution may be to tell us which OS/360 features the users find necessary to implement. With a better description and justification of what is required, we will be able to plan our implementation accordingly.

DOS Committee Request–Relocatable Library Cataloging:

It is required that the cataloging function for the Relocatable Library be handled in the same manner as that for the Core-Image Library; namely, the capability to catalog directly from a source deck (after compilation or assembly that is) without first having to obtain an object deck.

The necessity of first having to obtain an object deck is unacceptable to most DOS users for several reasons: 1) It is inconvenient and cumbersome; 2) Where turn-around time in an installation is a factor (and some users already have 24 hour turn-around time per job) it doubles the time necessary for any job; 3) It is inconsistent with the fact that options LINK and DECK are incompatible; 4) It assumes a card-oriented environment.

IBM Response:

It is technically feasible to modify job control so the user could compile and catalog in the relocatable library without punching cards. We do not plan on implementing this feature.

DOS Committee Request–2540 Punch-Feed-Read Support as SYSIN:

It is required that DOS support the punch-feed-read of the 2540 as SYSIN.

One of the main problems in attempting to use multiprogramming is contention for SYSIN. The punch-feed-read is an additional reader which is easily and cheaply available to many installations. Its support would greatly alleviate the problem of contention for SYSIN. In addition, this would prevent the entire system from going down when the reader was down.

The only reason we have heard that this support is not provided is that different CCW's are required. The same holds true for most of the devices that are supported, such as tapes, disks, and 1442's. This appears to be merely a small extension of the existing support. We are not asking for support of the 2540 punch-feed as both SYSPCH and SYSIN.

It might be possible to implement this request by treating a 2540 punch with the punch-feed-read as a 2520, if the required CCW's are compatible.

IBM Response:

We have no plans to support the requested item. It is not practical to support the 2540 punch-feed-read feature as SYSIN. Currently, the requirement is for a PUT to follow every GET instruction. Consecutive GET's cause a command reject.

DOS Committee Request–Automatic Job Cancel Feature:

It is requested that IBM investigate the feasibility of implementing an automatic job cancel feature available at SYSGEN time with an object time control card over-ride option.

A suggestion has been made to have IBM attempt to categorize errors in three classes: 1) Errors which never should return to the operator for correction-automatic cancel; 2) Errors which always should return to the operator for action; 3) Those errors in the grey area in between.

It is those errors in between which should be covered at SYSGEN time with a control card over-ride option.

continued on page 6

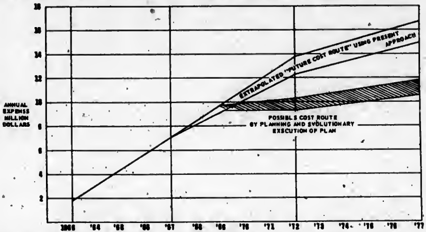
Virginia Acts To Cut EDP Dollars

RICHMOND, VA. – In a move to save up to $3,000,000 EDP dollars a year by 1972, the State of Virginia has hired consultants to check the report of a special computer advisory committee. The report, submitted last month, called for an immediate moratorium on EDP purchases and medium or long term leases. This moratorium would allow for standardization of Cobol and Fortran languages; state underwriting of costs for reprogramming present languages into the standardized language; and for the establishment of a new state systems analysis department to control EDP budget spending.

Supporting the report were cost estimates under the present and expected systems. The future cuts were shown in graph form (see chart). These figures were used by the governor to announce the hiring of Touche, Ross, Bailey and Smart as consultants. The governor also extended the life of the computer advisory committee headed by Mr. Gordon Robertson of Reynolds Metals.

The state auditor has not yet enforced the proposed moratorium, but he told COMPUTERWORLD that EDP matters were proceeding "with extreme caution."

State of Virginia Systems and Data Processing Cost History and Projection of Future



EDP Service Bureau Organization Moves Into New York HQ

NEW YORK, N.Y. – The Association of Data Processing Service Organizations (ADAPSO) opened its new worldwide headquarters here recently. The new offices are located in the Graybar Building, 420 Lexington Ave. Previously the offices were in Abington, Pa.

Access To People

ADAPSO president F.R. Lautenberg said, "This historic move to a major metropolitan business community is a continuation of plans developed for the Association's growth. It places ADAPSO in a position for greater access to information and people – two major ingredients for our growth."

Jerome L. Dreyer, newly appointed executive vice president, will manage the office.

Eighth Anniversary

The trade association will celebrate its eighth anniversary this year. Its membership numbers more than 300 data centers, presently handling over one-half-billion dollars in annual services.

The association is active in many ways, including action against the banking industry (over the threat of data processors being provided at uneconomic rates), and the communications industry (over the possibility of them taking over a disproportionate amount of the EDP market).

American Software Exported To Japan

PRINCETON, N.J. – The rapidly expanding market for American software is extending to the Far East. Although a number of manufacturers have marketed their software products in Europe, Applied Data Research, Inc. (ADR) is one of the first American manufacturers to tap the Japanese market.

ADR has named Japan Office Supplies, Ltd. as its Far East marketing representative for proprietary software products. They will primarily market ADR's Autoflow, a computer documentation system that automatically produces two dimensional flowcharts.

In making the announcement, ADR president Richard C. Jones said the new relationship represents ADR's first market expansion for its proprietary software products outside the United States and Canada. He also said that ADR is studying the European market for the development of similar direct market representation.

Japan Office Supplies, with headquarters in Tokyo, markets several lines of data processing accessories. Charles Decker, formerly president of IBM Japan, is founder and president of the 12-year-old company.

Pillsbury Sets Up Second EDP Subsidiary For Service Work

MINNEAPOLIS, MINN. – The Pillsbury Company of Minneapolis has started a second computer based subsidiary, Pillsbury Management Systems Company. The new unit, as well as Call-A-Computer, will be under the direction of James Rude, vice president for information systems. The companies will, however, operate independently.

The PSMC will employ a nationwide sales force and will work on the development "of information systems and highly technical communications – including real-time and time sharing computer programming."

The new company will be based in Minneapolis and Phoenix with Robert W. Callan (formerly of Management Information Systems Research for G.E.'s Center of Advanced Studies) heading up the southwest office. Callan will be vice president and general manager.

Details of actual company operation are still being worked out, but the areas to be served include business, industry, education and the computer industry itself.

Pillsbury got into special computer operation in a somewhat offhand manner. First they offered their own computer systems to educators, and then found that the demand – due to their success in handling the work – was growing faster than expected. Time-shared operations were particularly attractive, so Pillsbury joined with Occidental Life Insurance Company (who had similar G.E. equipment) and formed a computer time sharing subsidiary, Call-A-Computer. Rude gave up half his time to look after this firm while still maintaining his other responsibilities with the central Pillsbury operations.

The Call-A-Computer network is now a nationwide operation, with offices in New York, Baltimore, Boston, Atlanta, Raleigh and Minneapolis.

A Different Disk-Drive

A different style of disk pack is shown here. It only uses two disks; and has been introduced in England on the new low-cost ICT 1901A system. This system is competitive with the 360 Models 25 and 30. The disk drives are made by Control Data.

Quick Correction

Missing Typos Mystify Bostonians

BOSTON, MASS. – "The numerous typographical errors which appeared on page 1 and the inside pages of the Boston Globe's evening edition yesterday were the fault of an errant computer." That was what commuters read in their Boston Globe last week – and many were rather mystified.

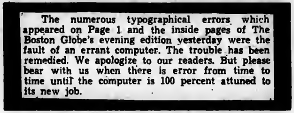
Thinking back, they could not remember *any* type errors on the previous day's front page – except one slightly out of line "o" and a name. Most of them would probably forget the matter, but some, finding a 12-o'clock edition of the paper at home would see that there had, in fact, been numerous type errors in the earlier edition.

What Happened

Despite the comment in the paper, however, it was not really the computer that created the type errors. The computer – a new Honeywell 1200 which is just coming into service – was being fed from keyboards which were on-line to the system. The problem appeared in a faulty keyboard, where, because of the online relationship, parity checks did not work properly. The matter was quickly traced and put into order.

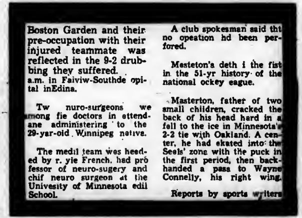
Paper Tape Eliminated

The new system at the Boston Globe is one of the most advanced systems. It is eliminating the use of paper tape between the originating keyboard and the computer. In most computerized type setting applications paper tape is used twice, once to take the punched data to the computer, and once to take it from the computer to the linotypes. In the new system paper tape is used only to take the material to the linotypes.



The numerous typographical errors which appeared on Page 1 and the inside pages of The Boston Globe's evening edition yesterday were the fault of an errant computer. The trouble has been remedied. We apologize to our readers. But please bear with us when there is error from time to time until the computer is 100 percent attuned to its new job.

Apology which appeared on page 2 of the Boston Globe Tuesday, January 16.



Boston Garden and their pre-occupation with their injured teammate was reflected in the 9-2 drubbing they suffered.
a.m. in Faiviw-Southde opital inEdina.

Tw nuro-surgeons we mong fie doctors in ettendane administering to the 29-yar-old Winnipeg native.

The medil team wes heeded by r. yie French. had pro fessor of neuro-sugery and chif neuro surgeon at the Univesity of Minnesota edil School.

A club spokesman said tht no opeation hd been perfored.

Mesteton's deth i the fist in the 51-yr history of the national ockey eague.

Masterton, father of two small chiidren, cracked the back of his head hard in a fell to the ice in Minnesota's 2-2 tie with Oakland. A center, he had ekated into the Seels' zone with the puck in the first period, then back-handed a pass to Wayne Connelly, his right wing.

Reports by sports writers

The worst of the typographical errors on the front page of the first afternoon edition of the Monday, January 15 Boston Globe.

The first tape is eliminated by the use of a keyboard (supplied by INVAC, Inc. of Waltham, Mass.) online to the computer system with the operator using a display to be sure that there are no errors.

Mr. Hyde, EDP manager for the paper, says that he believes there is a smaller system of on-line keyboards being used in England, but, that to his knowledge, this is the first major installation in this country.

Mauchly Backs T-S Firm In Phila

BALA-CYNWYD, PA. – A time-sharing service that offers six computer languages opened here last week. Computer Sharing, Inc. installed $2 million worth of computer equipment to serve the greater Philadelphia area.

Six Languages

The new company uses an SDS 940 computer system, which, they point out, is particularly rich in languages for time-sharing. The company offers six languages including the "standards" – Fortran II, IV, and Basic. They also have TAP (time sharing assembly program); DDT (dynamic debugging tool); QED, a language independent text editor; and CAL (conversational algebraic language), a language similar to Basic and designed primarily for time sharing systems.

Computer Sharing claims to be the only independent time sharing company in the area, and the only one with a computer on the premises.

Three Founders

The company was founded by three men: Walter T. Jones, president, and Berel H. Sternthal and Dana B. Bliss, vice presidents. The three saw the need for a time sharing service in the Philadelphia area and began planning it two years ago. So far $2 million worth of SDS 940 computers have been installed.

The firm now employs 17 people, with the technical staff having an average of ten years in the computer field. Mauchly Associates is one of the major shareholders in the anterprise.

Storage of the Data-Phones is a growing problem as the number of lines connected to a computer grows. Here are soma of tha 32 sets stored at CSI's new time-sharing facility.

EDPeople

Memorex Board Seat For Hale

Jerome L. Dreyer has been appointed executive vice president and secretary of the Association of Data Processing Service Organizations (ADAPSO). Mr. Dreyer was formerly assistant to the president.

Dr. Victor K. Pfirrmann has been named vice president for technical operations by *Computron, Inc.* of Bedford, Mass.

Richard Whitehead has been named marketing analyst for *Varian Data Machines*, Newport Beach, Calif.

Prentis Cobb Hale has been elected to the *Memorex Corporation* Board of Directors, according to Laurence L. Spitters, president and chairman of the board.

Paul E. Putney has been appointed director of industrial relations for *Scientific Data Systems*, Los Angeles.

George B. Maitland has joined *Electronic Memories, Inc.*, Hawthorne, Calif., as controller.

F.H. Shepard, Jr. and **Gilbert Kerlin** have been elected to the board of directors of *Vogue Instruments Corp.*, Plainview, N.Y. Mr. Kerlin is a partner of the New York law firm of Shearman & Sterling, general counsel for Vogue Instrument. Mr. Shepard was the founder and president of Shepard Laboratories, Inc., which was acquired by Vogue in October, 1967.

Thomas A. Welch has been appointed general manager of *Dial-Data, Inc.*, Newton, Mass., a subsidiary of Computer Research Corp.

Robert C. Oliver has been appointed manager – sales planning for *General Electric's Electronic Components Sales Operation (ECSO)*, headquartered in Oak Brook, Ill.

Donald B. Malcolm has joined the Ferroxcube Corp. sales staff as a Ferrita sales engineer. Mr. Malcolm will operata out of the Waltham, Mass. office, covering all New England.

Gilbert G. Moser has been promoted to eastern regional director of *Control Data Institutes*. Concurrently, **Charles H. Hiser** has been promoted to director of the Arlington training facility.

Jim Schell has joined *Leo Cohen Associates* as manager of the Washington office. Mr. Schell has been with the Automatic Data Field Systems Command for the past 5 1/2 years.

Edward R. O'Hara has been appointed staff director of manufacturing for *Sperry Rand's Univac Federal Systems Division*.

A.T. Bassett, Jr. has been promoted to general sales manager for the Space and Defense Systems Group of *Control Data Corp.*

Frank H. Burke has been named corporate attorney for *Statistical Tabulating Corp.*, Chicago.

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IBM Opens Up Internal Courses To Customers' Qualified Personnel

CHICAGO, ILL. – IBM has opened some "inside" courses to its customers. For $5,800 a customer's employee is entitled to receive the same training as IBM's systems engineering personnel. Alternatively, for just $1,600 (4 weeks) a systems analyst can be trained at the Systems' Research Institute in courses for design and analysis of communication based systems.

This is the first time that either of these courses – or any other such advanced courses have been opened to qualified non-IBM personnel. Last year a small number of people did attend some of the elementary part of the Fundamentals of System Training, but the Part 2 sessions have so far been "for IBMers only."

Design and Analysis of Communication-Based Systems

Tuition: $1,600
Schedule: Monthly through October, except for May and August,
Systems Research Institute, New York
Contents –

Queuing Theory: This is an area of specialized statistics concerned with the study and analysis of queues or waiting lines. Its techniques, properly used, allow the user to draw conclusions about systems having queues and to predict their reaction to change. The course is taught in parallel sections since students have differing degrees of mathematical backgrounds. A fundamentals of mathematics course is provided for those students without prior preparation. It meets outside regular class hours.

Simulation: Simulation is the general technique involving the construction of a model of some aspect of the physical world for specific objectives and uses. This course considers the construction of mathematical models of systems for study and analysis by computer techniques. Emphasis is placed on performing experiments upon the models and interpreting the results for the purpose of inferring behavior characteristics of actual systems.

Communications and Equipment: Communication Based Systems require the integration of two independently developed technologies – the concepts and equipment of communications as well as information processing. This course reviews the communication components and facilities.

Programming for Communication Based Systems: This course examines new programming requirements and discusses techniques of implementation. Such topics as Time-Sharing, Multi-Programming and Multi-Processing are discussed and placed in perspective.

System Design and Development: Each system must be tailored to meet the reqoirements of a specific situation. This course traces the general System Development Process and in an extansive case study provides the opportunity for practical experience in applying the skills developed in the other courses.

Fundamentals of System Engineering Training

Tuition: Part I - $3,500 (Not needed by experienced DP)
Part II - $2,300

Schedule: Part I - (not-definite)

Part II - Chicago, March; Los Angeles, February
New York, April

Contents –

Part 1 has several areas of emphasis. These are:
1. Business Organization and Data Processing Applications.
2. System Study and Design.
3. Knowledge of the S/360 Fortran, Cobol, RPG, and Assembler Languages.
4. Effective use of the S/360 Disk Operation System.
5. Communication Skill Development.

Treated briefly are: (a) Punch Card Machine Principles; (b) Taleprocessing Introduction; (c) Management Science; (d) Sorting Principles.

Part II includes:
1. **Statistics** - Objective is to acquaint the student with statistical concepts, terminology and techniquas used in systems design and analysis.
2. **Simulation** - Objective is to develop the student's onderstanding of the use of simulation as a tool for systems design and general problem solving.
3. **Data Storage and Handling** - Objective is to inform tha student of systems design consideration in using direct access storage devices.
4. **Programming and Operating Systems** - Objective is to teacb the student how the power and utility of a computer is extended by tha use of programming systems.
5. **Communication Based Systems** - Objective is to enable the student to recognize the potential, feasibility, and advantages of a terminal oriented system.
6. **Communication Skills** - Objective is to furnish the student with some formal instruction and practice in basic communications skills.
7. **Case Study** - Objective is to enable the student to develop, organize and present a proposal for a data processing system.

Saving EDP $s With Your 360/25 Part 3 . . .

You Might Like To Save On The Hardware, But —

By Alan Taylor

In previous articles of this series we have considered the possibilities of saving EDP dollars by using the 360/25 in place of the 360/30, or as an upgrade machine from the 1400 series. We have considered the techniques of maintaining control during installation, emulation and native-mode programming use. In each case we have noted possibilities as well as problems.

This week we are leaving these areas to one side. Instead, we are dealing with the needed hardware. Must you pay what you are proposing to pay? Must you have that particular hardware? Does an EDP manager have any freedom to select once he has chosen the 360/25?

The IBM 360/25 offering includes a central processor that has an integrated control unit, and a number of peripheral units. These peripherals are carefully matched; are compatible with the hardware; and supported by the software. However, the software depends only on the central processor hardware insofar as its actual operation is concerned. It is *not* necessary to use IBM hardware throughout the system for your software to function properly.

At the moment most of the computer systems in this country do use IBM hardware. However, the key facts are: 1) Your 360/25 will not be delivered until 1969. 2) Rental contract terms with IBM make you pay for the privilege of being able to cancel specific items of equipment at short notice – so why not think of using it? 3) During 1967 there were major developments in new units to be "plug-for-plug" compatible with some of the most standard IBM 360 units. And, this movement is continuing.

Whether or not this will actually add up to concrete savings is not clear. However, it is clear that if you want savings, and not problems, now is the time to get started.

Magnetic Tape Units?

What then are the units that will be capable of replacing IBM tape drives – and what are the savings involved? Looking around, you will learn that the biggest savings are presently being offered on magnetic tape units. Most of the 360/25s will have magnetic tape units, but in fact, there is little to be saved here. This is due to the fact that standard tape units allowed on the 360/25 are the very low level 30 KB. By contrast, the tape units that represent the largest savings are the faster 60, 90 and 180 KB units; but these units are not available to you on the 360/25.

In the future, there may be some savings here. However, the present position shows that the IBM units are still the cheapest available. (Fig.1)

Disk Drives

The problems of disk drives are different. 2311s are expensive – the Model 1s cost $25,000 each, but there are less expensive alternatives entering the market. Figure 2 shows a current situation with the alternatives, and arrangements to optimize your savings.

There are other plug-for-plug compatible hardware systems available. The Anelex Printer is one. But, as yet, there is not much actual data for setting up 360 systems with the peripherals. If you went to do this, go ahead. Remember to carefully check the quality and acceptability of the printer. From the engineering point of view the IBM printer is an unusually solid unit; and most installations only have a single unit. Whether or not the potential savings on the IBM printer are worth the cost appears to be somewhat marginal, and should be considered carefully. Another possible savings comes from the Potter ADLOGIC unit, which has just been announced. (Fig. 3)

Organizing The Operation

Where there are alternatives available, the use of them will involve some pioneering work. Your 360/25 is not due for a year, but the competitive peripheral manufacturers are beginning to show the first production line units for use on 360s. When you write to them, you will probably get a letter from their public relations office that seems almost laughable. They will urge you to request that your computer supplier put their product into your computer! Just what chance they feel you have in achieving this with IBM seems doubtful. There is little chance of this occurring.

If you persist, you will find that the problem involved is service. The fact is that before you can make a saving you must make it economically practical for the company supplying the alternative peripherals. This will create few problems in large metropolitan areas such as New York, Los Angeles, Chicago, etc,, but elsewhere it may be serious.

To solve this, you should try and locate the other users in your immediate area that might go the same route. A peripheral manufacturer is only moderately interested in your four or five tape drives, but is extremely interested in twenty tape drives. Twenty is apparently the magic number that allows you to get a full time service man assigned to you. Disk drives seem to be in the same approximate position – you will have to be part of a market between 12 and 20 before it becomes practical to service you.

To form your own group, use your local DPM and ACM Chapters. Go to meetings, talk to the manufacturer's representative, talk to your friends. It sounds like a lot of work – and it is – but it is work that could pay off in thousands of dollars and, sometimes, in much higher throughput. At the moment, *you* have to get out and solicit the manufacturers of alternative peripherals.

Figure 1: The present position on the 360/25 Plug-For-Plug Compatible Tape Unit Market.

IBM Unit – 2401 Model 1 Tape Unit	
Key Characteristics	30,000 bytes/second speed
Price	Rental – $345 a month Purchase – $15,620
Competitive Units	
Ampex Corporation TM-16	Purchase $15,700
Consolidated Ellectronics	Announced In November 1967, now being modified.
Management Assistance, Inc.	All MAI tapes operate at higher speeds than can be allowed on the 360/25.
Midwestern	All Midwestern tapes are at higher speeds than are allowable on the 360/25.

Figure 2: The present position on the 360/25 Plug-For-Plug Compatible Disk Drive Market.

IBM Unit – 2311 Disk Drives	
Key Characteristics	75msec access time
Competitive Units	
Control Data Disk Drives	Also 75 msec access time. Plug-to-plug compatible units available to special order.
Memorex 630 Disk Drives	50 msec access time. No direct to user sales announced as yet.
Univac Disk Drives	No sales to competitive system users contemplated.

Figure 3: The present position on the 360/25 Market for Other Non-IBM Equipment.

Other Competitive Units	
Anelex Printer	Plug-to-plug compatible printer now being marketed through Mohawk Data System.
Potter Adlogic Unit	New unit which can increase capacity of undivided 2311 disk packs. No known installation as yet.

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The Singer Company

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Share DOS Project

DOS Users' Requests & IBM's Responses

continued from page 2

In instances of programming, keypunch or deck-setup errors, DOS halts with accompanying SYSLOG errors to allow the operator time to look up an error code and take corrective action. To paraphrase a paraphrase from another speaker, the system halts to allow the operator time to take corrective action, which, if he is not a trained programmer, he is spectacularly incapable of taking intelligently.

In installations where the operator is not a trained programmer, it is desired to be able to remove him from the decision-making/corrective-action process during the processing of a job. However, in installations where the operator is the programmer, or where the input is critical, or the systems programmer is in attendance, the capability to include the operator in the decision-making/corrective-action process during the processing of a job is highly desirable.

IBM Response:

We have no plans to implement the requested function although it is technically feasible.

DOS Committee Request–Foreground I/O Assignments:

It is required that standard I/O assignments be provided for the foreground partitions.

Standard I/O assignments are limited to the background partition only, but they are needed as much in the foreground partitions.

IBM Response:

It is technically feasible to supply the requested function to the system. We have no plans at the present time to add this capability to the system. It should be noted that a user can assign his foreground I/O areas each day at IPL time and hold them until the next IPL.

DOS Committee Request–Documentation on "How to Handle Unsupported Devices in BTAM and QTAM."

Additional documented material on the above subject is necessary before DOS users are able to implement their own support for these devices.

DOS BTAM and QTAM software does not support all terminals. The user at the present time must modify existing software to accomplish his goals, but SRL's, PLM's and source listing do not give adequate information in order to do so.

IBM Response:

We are investigating the possibility of and need for providing documentation to be used along with the PLM as a guide for handling unsupported devices in BTAM and QTAM. The document is not in our current plan.

DOS Committee Request–Reassignment of Devices During Job Steps:

It is requested that the capability be implemented to reassign devices during execution of a job step.

If a device goes down for some reason near the end of a long-running job, it would be desirable (and many times is necessary as in the case of the building of a master file which is intolerant of lost data until completion of the job step) to reassign the file to another device and continue running rather than to have the job cancelled.

In a multi-programming system there is much contention for input-output devices. Many programs read data only at the beginning and then compute for a long time. Unless, however, the programs were carefully written with this in mind, it is impossible to release the device for use by another partition.

IBM Response:

We recognize this requirement, especially in the TP area. We have no plans to implement this improvement in the system, although it may be technically feasible to do so. At present, we have not determined all the implications of this requirement.

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- **Over-powered with DP equipment?**
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1968 Annual Directory of Data Processing Service Centers. *Published by ADAPSO. $2. Order from: ADAPSO, 420 Lexington Ave., New York, N.Y. 10017.*

Lists more than 350 ADAPSO member firms and their branches, approximately 45% of the total industry, offering EDP services. Arranged by state and city with additional alphabetical grouping in the index. Member representation up nearly 50% from previous issue.

New Use For Ears

Sixth Sense Is Found — And You Can Learn It!

Engineers at the Midwest Research Institute, Kansas City, have found that some people can hear electromagnetic wave impulses over a narrow range of frequencies on the first try. Other people can learn to hear the impulses after having failed initially.

The discovery was an off-shoot of a study on radiation hazards of high frequency waves. When subjects reported buzzing in the head, the engineers experimented with equipment that transmitted energies at three, six and ten centimeter wave lengths. Weak signals were used and the subjects received only thousandth-watt impulses from six to ten feet away. The frequency was modulated in pulses at 100 to 1000 a second; a frequency common to several pieces of computer I/O equipment.

Not only could the subjects hear a buzzing sound, they could also detect changes in pulse rate.

At this point, no one knows whether the effect deals with the auditory system or some other phenomenon in the body. It is possible though, that man has transmitting and receiving capabilities.

Care to design the hardware anyone?

Tymshare Buys More SDS 940s; Starting Up New York Center

Orders and Installations

The *U.S. Air Force* has installed two *Control Data* 3300/1700 dual computer systems as its Western Test Range at Vandenberg AFB. The computers will process preflight missile checkout data, as well as data acquired by telemetry during actual launchings. The systems will also be used for post-launch data reduction.

Tymshare, Inc., Los Altos, Calif., has ordered three additional *SDS* 940 computers valued at $3,700,000. When the machines are delivered by the middle of 1968, Tymshare will have a total of five 940s in operation. Tymshare currently operates SDS 940 time-sharing computer centers in Los Angeles and San Francisco. The new computers will be installed there and in the greater New York metropolitan area, where a new facility is being established.

Bell Telephone Co. of Canada has installed a *Control Data* 3150 computer system to handle the computing needs of its headquarter's statistical staff. Bell is developing special simulation programs for use on the 3150 to assist the company's management in forecasting and planning.

Ampex Adds 30% To Tape Capacity

Expansions

MINNEAPOLIS, MINN. – *Source EDP* opened its sixth branch office in Minneapolis in December. Fred W. Anderson is director of management information services at the new office. The recruiting firm, which specializes in the computer field, has offices in Chicago, Detroit, Los Angeles, New York and San Francisco.

OPELIKA, ALA. – Construction has been completed on an addition to *Ampex Corp.'s* magnetic tape division manufacturing facility here. Production is expected to rise some 30% as a result of the 35,000 square foot addition.

New Products

12-Unit Disk-Pack Storaway Debuts

A digital input/output unit for the SEL 800 Series computer systems has been introduced by *Systems Engineering Laboratories (SEL)*. The unit will accommodate 12 No. 2316 SEL 810B, as well as with the SEL 810A, SEL 840A and SEL 840MP. The unit, priced at under $2,000, is in full production and is being installed with computer systems delivered this month.

A new disk pack Storaway is available from *Tab Products Co.* The unit will accomodate 12 No. 2316 or No. 1316 disk packs. Write Tab Products Co., 633 Battery Street, San Francisco, Calif. 94111.

$ $ FINANCIAL MATTERS $ $

DETROIT – *Burroughs Corporation*, reported record reveoue and earnings for the past year. lo making the announcement president Rey. W. Macdonald said incoming orders and year-end backlogs were also the highest in the company's history.

Net earnings form worldwide operations, after provision for foreign operations of $1,250,000, amounted to $34,830,000, or $4.26 a share on 8,178,367 average shares outstanding. This represented a 16% increase over earnings of $29,950,000 (after deducting $1,035,000 profit from oon-recurring sale of land) in 1966. Earnings for 1966 equaled $3.72 from operations and $3.85 a share including the land sale. Estimated United States and foreign income taxes were $29,310,000 in 9167 and $28,380,000 in the preceding year.

Worldwide revenue increased 12% to $553,886,000 from $493,778,000 in 1966. Fourth quarter revenue was $173,043,000, including more than $17 million in governmeot cootract billing, compared with reveoue of $146,060,000 in the final quarter of 1966.

Net earnings for the 1967 final quarter were $15,644,000, or $1.91 a share compared with $13,924,000, or $1.72 a share for the fourth quarter of 1966.

FORT LAUDERDALE, FLA. – *Systems Engineering Laboratories* has approved a stock distribution of one additional share of stock for each share of stock owned of record on February 1, 1968. The distribution is subject to approval by stockholders at a meeting to be held in March.

The company reported record sales and earnings of $5,539,000 and $421,000 or $.43 a share, respectively, for the 24 weeks ended December 15, 1967. lo the similar period last year the company reported sales of $2,745,000 and earnings of $82,000 or $.09 a share.

MINNEAPOLIS – *Control Data Corp.* reported sales, rentals and service income of $163,938,959 for the six mooths ended December 31, 1967 as compared with $110,464,119 in the same period last year, for an increase of 48%. Net earnings for the six month period were $8,563,386 which, after preferred stock dividends (equivalent to $.03 per share of common stock), amounted to $1.01 per share of common stock. This compared with earnings of $1,769,410 and, after preferred stock dividends, $.16 per share for the same period last year.

EL SEGUNDO, CALIF. – *Computer Sciences Corp.* reported record revenues and earnings for the 39 weeks ended December 29, 1967. Net after-tax earnings for the period totaled $2,620,000, equal to $.61 per share on an average 4,314,432 shares outstanding. In the comparable period in 1966, net earnings were $1,086,000, or $.26 per share, based on 4,234,632 average shares. Revenues rose to $38,709,000 in the 39 weeks, up from the $27,257,000 recorded in the like period of the previous year.

Computer Stocks: Trading Summary

Week Ending January 16, 1968

NEW YORK STOCK EXCHANGE	1967 High	1967 Low	Week High	Week Low	Last	Week Net Change	Week %Change
Addressograph-Multigraph	66 1/2	46 7/8	76 1/2	75 3/8	77 3/4	+ 3 3/4	+ 2.50
American Research	163	57 3/4	177 1/4	157 1/2	166 1/4	+ 8 1/8	+ 3.78
Ampex Corp.	40 3/4	22 3/4	34 1/8	33 1/8	34 7/8	+ 1/4	+ 0.72
Burroughs	198 3/8	66 7/8	190 1/8	185 7/8	187 1/4	+ 1/2	+ 0.27
Collins Radio	114 7/8	53	64 1/2	64	64 1/4	- 5 1/2	- 6.15
Control Data	165 5/8	33 1/2	141 3/4	131 5/8	132 1/4	- 6 1/4	- 4.51
Electronic Associates	50 1/4	18 3/4	21 7/8	21 1/2	22	- 1/8	- 0.57
General Electric	115 7/8	82 1/2	95 1/4	92 7/8	93 3/8	- 2	- 2.10
Honeywell	117 7/8	61 1/2	101	97	97 1/2	- 2 7/8	- 2.86
IBM	648	362 1/2	636	609	621	+ 5	+ 0.81
Litton	120 1/8	70 1/2	58 1/8	53 3/8	53 7/8	- 3 1/8	- 5.23
Nat Cash Register	150 5/8	47 1/8	123	116 1/4	118 1/2	- 1 1/4	- 1.04
RCA	65 1/2	62 1/8	55 3/8	50 3/8	50 7/8	- 1 3/4	- 3.33
Raytheon	117	66	98	89 1/4	89 3/4	- 8 1/2	- 8.65
Sanders	77 1/4	17 3/4	61 1/2	53 5/8	54 1/2	- 5 1/4	- 8.79
Scientific Data	152 1/4	70 3/8	143 1/4	125	150	. . . .	. . . .
SCM	82 1/4	65 1/2	61 1/4	55 5/8	58 7/8	+ 3 1/2	+ 6.53
Sperry Rand	63 1/8	28 1/8	57	53 1/2	54 1/4	- 5/8	- 1.14
NYSE COMPUTER STOCK AVERAGE						- 1.23	- 1.64

AMERICAN STOCK EXCHANGE	1967 High	1967 Low	Week High	Week Low	Last	Week Net Change	Week %Change
Audio Devices, Inc.	31 1/4	20	33 1/8	28 5/8	32 7/8	+ 4 5/8	+16.37
Automatic Data Processing	64 1/2	41 1/2	65 1/4	57 3/4	66 1/2	+ 1	+ 5.22
Calcomp	46 3/4	34	45 1/4	38 1/8	40 1/8	- 3 3/4	- 6.58
Computer Applications	67 5/8	14	61 5/8	57 1/2	37 7/8	- 1/8	- 0.15
Computer Sciences	67 3/8	18	58 3/4	52 3/4	53 5/8	. . .	. . .
Digital Equipment Corp.	134	26 5/8	127 1/2	117 1/4	122 1/4	+ 1/8	+ 0.10
GC Computer Corp.	41	21 1/4	32 7/8	30 1/4	30 1/4	- 2 1/8	- 4.34
Leasco	146 1/4	13 5/8	146 1/4	126 1/2	136 1/2	+ 8 1/2	+ 6.64
Levin-Townsend Computer Corp.	77	10 7/8	73 1/2	64	67 3/8	+ 1/2	+ 0.75
Milgo Electronics	23 1/8	5 1/8	23 1/8	16 1/4	[illegible]	+ 1 7/8	+ 9.66
Mohawk Data Sciences	158 1/2	167	165	148	160 1/4	+ 2 1/4	+ 1.42
Planning Research	51	27 5/8	41 7/8	38 7/8	41 3/4	+ 1/4	+ 0.61
Potter Instrument	66 1/2	12 5/8	35 7/8	33 3/8	32 5/8	+ 7/8	+ 2.67
Randolph Computer Corp.	55 1/4	13 1/4	54 1/2	47 1/2	51 1/8	+ 4 1/8	+ 8.62
AMEX COMPUTER STOCK AVERAGE						+ 1.51	+ 3.77

OVER-THE-COUNTER	1967 High Bid	1967 Low Bid	Friday Bid	Friday Asked	Last Friday Bid	Week Net Change Bid	Week % Change Bid
Applied Data Research	30	5 1/8	28	30	28	. . . .	. . . .
Bolt, Beranek & Newman, Inc.	30	6 1/4	22 3/4	23 1/4	23 1/2	- 3/4	- 3.19
Computer Usage	72	20 1/4	56	57 1/2	54	+ 2	+ 3.70
Cyber-Tronics	16	4 1/4	10 1/2	16	30 3/4	- 1/4	- 3.31
Data Products	25 1/8	1 1/2	18 5/8	19	18 3/4	- 1/8	- 0.67
Digitronics	27 1/2	6	20 1/4	21	24 1/2	- 4 1/4	-31.23
DPA, Inc.	17 1/8	6 1/4	17 3/8	17 7/8	14 1/2	+ 2 7/8	+16.85
Electronic Memories	57 1/2	12 3/4	57	58	56	+ 1	+ 1.76
Fabri-Tek	15 1/4	6	11 1/2	12	12 1/8	- 5/8	- 5.15
LTK Data, Inc.	16	7 1/8	14	14 1/2	13 1/4	+ 1 1/4	+35.49
Management Assistance	24 1/8	10 1/8	14 5/8	11	15 3/8	- 3/4	- 4.88
Memorex	328	63	201	204	200	+ 1	+ 0.50
Optical Scanning Corp.	102	35 3/4	94	96	87	+ 7	+ 8.05
Recognition Equipment Corp.	161	48 1/2	188	191	189	- 1	- 0.53
Systems Engineering Labs	65 1/4	8 7/8	58 1/2	61	60	- 1/2	- 0.83
University Computing Co.	95	72	86	88	80	+ 6	+ 7.50

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New York City Cancels Advanced Traffic Control Contract

NEW YORK – Henry Barnes, Traffic Commissioner for New York City, has announced a mutually agreed upon cancellation of the three-year-old $5.4 million Sperry Rand computerized traffic control system for the city. In place of the advanced city-wide system proposed by Sperry Rand, a much smaller and simpler process (based on a forthcoming IBM installation and using practically off-the-shelf items) will be the basis of new specifications. The small IBM system has not yet been ordered by New York, but the commissioner is hoping to get purchase authority without going through the standard bidding process.

The major problem has been lack of quality control by the contractor. The remotes – in this case the controllers – were to have been placed at 2,693 intersections in Manhattan, are already made and some are installed. However, the installations ran into trouble when it became evident that many pieces of equipment were not properly put together. One controller was so poorly installed that the traffic commissioner was able to loosen 23 screws with his thumbnail.

Inadequate Technical Approaches

Norris S. Rockwell, vice president and general manager of Sperry Gyroscope Division acknowledged in a recent interview that there had been some personality problems between the division's engineers and the commissioner. He also said that when the project got into financial straits, "the response was more toward saving money than toward doing the job. The project solidified a lo [illegible] h- nical approaches which were [illegible] quate, and set up cost controls [illegible] were not realistic."

Losers Might Sue

After a recent interview between the contract signers, project management was changed and the number of engineers on the project was quintupled from 12 to 60. The idea was to retrieve all equipment that had been delivered, revamp and test everything until it worked.

Despite the change in outlook, however, the city's situation was serious. There had been such substantial changes in the specifications that New York City was potentially vulnerable to complaints, and even lawsuits by bidders who had lost out to Sperry Rand. Sperry Rand felt that due to so many changes it "was impractical to modify the existing contract."

use!

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CROSS REFERENCE AID

- Valuable time-saving aid for COBOL Programmers
- Designed to cross-reference every data name, literal and library name in the Procedure Division of COBOL Source Programs

COBOL-AID

Quickly transforms Source Statements into a cross-reference list by page and line number in two ways:

1. By individual source programs
2. By all programs in a system to indicate any program and all statements that reference each data name. Modification of master files is greatly simplified.

```
D A T A   N A M E    PROGRAM    PGLINE  PGLINE  PGLINE  PGLINE  PGLINE  PGLINE  PGLINE
'1'                  SAMPLE1    104040  104100  104120  104150  104210  104550  105140
                     SAMPLE2    104730  105450  106180
ACCOUNT-NAME         SAMPLE2    104740  105460  105840  105930  106165  106190  106310
                                106490  106860  107520  107760
SALES-YTD            SAMPLE1    105330  105350  105440  105560
                     SAMPLE2    104670  104800
```

COBOL-AID located every statement . . .. (Subscripts and Qualifications, too!)

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'How To Cost EDP' Is ADAPSO Focus

The costs of providing EDP services in today's market will be the focus of the first 1968 management conference of the Association of Data Processing Service Organizations (ADAPSO). The two-day meeting is scheduled for February 22 and 23 at the Jung Hotel in New Orleans.

The conference program is under the direction of R.T. Pertuit, president of Data Processing Center, Inc., New Orleans. The program will include current marketing methods used successfully by service centers and a prognosis for the future direction of independent electronic data processing service centers.

Communications

continued from page 1

procurement evaluation, Mr. Greenberg pointed out that the evaluation program is also quite useful in defining problems in communications systems presently in operation. The Evaluator can determine the effects of potential changes before they are implemented. The specific items that it determines include the minimum system configuration necessary to handle specified message loads; the time it takes for messages to pass through the system; the time available for non-communication programs in other partitions; and the optimum design for message processing programs.

Defense Secretary

continued from page 1

"think-tanks." The resignation of staff, even at the highest level, should not prevent new competence from being obtained.

Surprise Appointment

The appointment itself came as a considerable surprise. Clifford's name had not been mentioned in informed circles to any great extent. He is an attorney with Clifford and Miller, a law firm specializing in corporate and labor law. After the "Bay of Pigs" he was appointed to the Foreign Intelligence Advisory Board and later became its chairman. This board was specifically set up to prevent future incidents. He has made a number of fact finding trips to Viet Nam for Johnson and was an advisor at the 1966 Asian summit meeting in Manila.

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